

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
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OFFICE OF SECRETARY

In the Matter of

Preparation for International  
Telecommunications Union World  
Radiocommunication Conferences

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IC Docket No. 94-31

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To: The Commission

COMMENTS OF UTC

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## **SUMMARY**

In suggesting that the private land mobile bands at 150-174, 450-470 and 470-512 MHz could be allocated to the Mobile Satellite Service, the FCC's Industry Advisory Committee seriously underestimated the number of transmitters currently operating in these bands, the growth of the mobile services in these bands, and the prospects for accelerated growth due to the FCC's "refarming" effort. There also seems to be a fundamental contradiction between the criteria for land mobile and MSS to share spectrum and the types of services the MSS proponents hope to offer. Similarly, the IAC's designation of certain "lowest priority" bands seems misplaced, as these bands would suffer from many of the same problems. UTC therefore urges the FCC to recommend against the allocation of these private land mobile and microwave bands to the Mobile Satellite Service.

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COMMENTS OF UTC

Pursuant to Section 1.415 of the Commission's Rules, UTC<sup>1/</sup> hereby submits its comments on the Second Notice of Inquiry, FCC 95-36 (Second NOI), released January 31, 1995, in the above-captioned matter. By the Second NOI the FCC seeks comment on preliminary proposals for the 1995 World Radiocommunication Conference (WRC) and future WRCs.

I. Background

UTC is the national representative on communications matters for the nation's electric, gas and water utilities and natural gas pipelines. Approximately 2,000 utilities and pipelines are members of UTC, ranging in size from large combination electric-gas-water utilities serving millions of customers each to small rural electric cooperatives and water districts serving only a few thousand customers each. All utilities and pipelines depend

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<sup>1/</sup> UTC, The Telecommunications Association, was formerly known as the Utilities Telecommunications Council.

on reliable and secure communications facilities in carrying out their public service obligations. Virtually all utilities and pipelines use private land mobile and microwave communications facilities to meet these communications requirements. UTC is therefore interested in this proceeding, which has identified several critical utility and pipeline communications bands for possible discussion at WRC-95.

In connection with its review of international "constraints" on Mobile Satellite Services (MSS), the FCC has asked for comment on several frequency bands that have been suggested for allocation to non-voice, non-geostationary (NVNG) MSS below 1 GHz.<sup>2/</sup> Attached to the Second NOI is a table prepared by the FCC's Industry Advisory Committee on its recommended candidate bands for additional allocations for MSS below 1 GHz. The IAC has prioritized the candidate bands into three categories:

Priority One	bands the IAC considers as most desirable for allocation in the near term and on a worldwide basis;
Priority Two	bands where NVNG MSS can share with existing services, however achieving worldwide allocations might be difficult; and
Lowest Priority	bands used heavily in the U.S. However, the nature of existing operations might permit sharing. <sup>3/</sup>

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<sup>2/</sup> Second NOI, paras. 56-58.

<sup>3/</sup> Second NOI, para. 57.

**II. Private Land Mobile Bands Should Not Be Included in the  
"Priority Two" Category As Possible Sharing Candidates**

UTC finds serious fault in the IAC's identification of certain bands as "Priority Two" bands, and urges the FCC to recommend against the allocation of these bands to MSS. Specifically, the IAC has identified the 157.0375-174 MHz, 450-460 MHz, and 470-512 MHz bands as "Priority Two" bands. However, even under the IAC's own criteria, these bands would not be suitable for MSS.

**A. The 150-174, 450-470, and 470-512 MHz Bands Are Heavily  
Used By Every Segment of the Private Wireless Community**

In the United States, the 150-174, 450-470 and 470-512 MHz bands are allocated for, among other things, use in private land mobile communications systems. These bands are the primary land mobile bands for utilities, pipelines, railroads, public safety agencies, motor carriers, taxicabs -- virtually every business and state/local government operation in the country. There are an estimated 15 million transmitters operating nationwide in the bands allocated for private land mobile radio (PLMR) use.<sup>4/</sup> Of these, the FCC estimates that the PLMR bands below 470 MHz represent about 75 percent of the PLMR licenses and about 81 percent of the PLMR transmitters.<sup>5/</sup> Utilities alone have

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<sup>4/</sup> National Land Mobile Spectrum Requirements, NTIA Publication TM 94-160 (January 1994), at p. 116.

<sup>5/</sup> Notice of Inquiry in PR Docket No. 91-171, 6 FCC Rcd 4125 (1991), at para. 8.

approximately 50,000 licenses in the PLMR bands, operating with over 700,000 transmitters.

Mobile radio communications is the vital link in virtually all utilities' and pipelines' communications systems. Mobile radio is used for field crew dispatch, nuclear plant security and emergency response communications, hydraulic dam flood warning siren and alarm communications, emergency response to gas leaks and electrical outages, and security and safety for transmission line crews and meter readers.

Priority use of mobile radio frequencies involves the efficient and timely dispatch of emergency crews to ensure restoration of service to customers, removal of hazards to persons or property (e.g., downed electric transmission lines or ruptured natural gas mains), coordination of the stringing of electric transmission wire along busy urban thoroughfares -- enabling close coordination of crews that could be separated by over 2,000-3,000 foot distances -- and issuance of orders and authorizations in connection with system failures or overloads requiring immediate attention. Some states require the immediate dispatch of a properly trained employee to any customer-reported emergency within a set time frame (often 60 minutes) after notification to the utility. This would be impossible for utilities with large operating territories if they did not have reliable mobile radio communications systems operated under their

complete control. Mobile radio systems also serve as back-up communications systems between substations, power plants, gas compressor stations and utility operations centers if the public switched network fails or is overwhelmed during a disaster or civil emergency.

Utility and pipeline land mobile radio systems are employed for many day-to-day uses, such as assignments of service connections to crews, transmissions to obtain materials or information needed to complete work in progress, requests for state approval of connection of individual services and transmission of switching orders.

Mobile channels are also used for the management of energy load. Without load management capabilities, some utilities would be forced to develop additional megawatts of generating capacity just meet peak load requirements. Effective use of load management programs minimizes the cost of electricity for consumers, and decreases environmental impacts.

**B.    The IAC Report Was Apparently Based on a  
Misunderstanding of the Extent of PLMR Operations in  
These Bands**

The table accompanying the IAC report provides no information as to the extent of land mobile usage of these bands. The IAC simply notes that the 157.0375-174 MHz band "[m]ay be scheduled for narrow-band use only in 1995," and that the 450-460



MHz band is "being considered for rechannelization." In fact, it appears that the IAC made this recommendation with little appreciation of the number of transmitters operating in these bands or the types of operations being conducted. For example, Informal Working Group 2 (IWG-2) noted the operational and regulatory restrictions on MSS use of the 148-149.9 MHz band, another band allocated for Fixed and Mobile use. Among the restrictions the IWG-2 found objectionable was the necessity for "Non-interference Sharing with Tens of Thousands of Existing Users Worldwide."<sup>6/</sup> If the MSS community finds it objectionable to share with "Tens of Thousands" of Fixed and Mobile users worldwide, it will surely find it objectionable to share with millions of Fixed and Mobile users in this country alone.

Likewise, IWG-2 stated that it avoided recommending "bands with very heavy civil, industrial and military use."<sup>7/</sup> In fact, however, the 150-174, 450-470 and 470-512 MHz bands are among the most extensively used frequency bands licensed by the FCC, supporting all manner of public safety, industrial, and business communications.<sup>8/</sup>

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<sup>6/</sup> Interim Report of IWG-2, p. 11.

<sup>7/</sup> IWG-2 Interim Report, p. 17.

<sup>8/</sup> Approximately 40% of the licenses issued by the FCC are in the Private Land Mobile Radio Services. NOI in PR Docket No. 91-170, 6 FCC Rcd 4125 (1991), at para. 8.

**C. "Refarming" of the PLMR Bands Will Increase the Number of Transmitters in These Bands**

Even considering the one fact duly noted by the IAC - the likely rechannelization of these bands - there will likely be an increase in the number of land mobile transmitters operating in these bands due to ongoing efforts by the Commission to "refarm" this spectrum through rechannelization.<sup>9/</sup> Through this refarming effort, the Commission hopes to implement a four-fold increase in the capacity of these bands over the next 20 years in order to accommodate the 8-10% annual growth rate of licensed PLMR transmitters in these bands. NTIA has projected that the number of PLMR transmitters could double from 10 million transmitters in 1986 to 20 million transmitters in 1996, with the number of transmitters in 2004 exceeding 25 million.<sup>10/</sup> It does not appear the IAC considered the ramifications of this growth rate or the FCC's rechannelization effort when the IAC prepared its list of candidate bands.

**D. The Proposed Sharing Criteria Are Inconsistent With the Anticipated Deployment of NVNG MSS**

Even assuming the IAC understood the extent of land mobile usage in these bands, there are discrepancies in its assessment

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<sup>9/</sup> Notice of Proposed Rule Making in PR Docket No. 92-235, 7 FCC Rcd 8105 (1992).

<sup>10/</sup> National Land Mobile Spectrum Requirements, NTIA Publication TM 94-160 (January 1994).

of how these bands could be shared with MSS. IWG-2 suggested that narrow-band MSS could share in bands allocated for Fixed and Mobile use through a combination of: (1) dynamic channel avoidance; (2) low duty cycle; (3) brief message duration; and (4) geographical separation.<sup>11/</sup> Similarly, IWG-2 suggested that wideband MSS could share in bands used by Fixed and Mobile systems through a combination of: (1) low output power density; (2) brief message duration; (3) low data rate; (4) filtering at the satellite; and (5) geographical separation.

However, IWG-2 also reported that future NVNG MSS operations below 1 GHz will not conform to at least three of these sharing criteria: brief message duration, low duty cycle, and low data rate. In arguing for additional MSS allocations, proponents argued that future MSS operations below 1 GHz would have to offer higher level services competitive with those offered by MSS operations at higher frequencies:

...Because MSS operating at higher frequencies require far more expensive space segments and subscriber equipment than do those operating at lower frequencies, subscribers will inevitably demand increased functionality from MSS service providers operating below 1 GHz. This means capability for longer messages, value added information services and other telecommunications services. The existing allocations are unable to support transmission of longer messages, data/information files, facsimile and similar services. Thus, future spectrum allocations should more realistically provide for expansion of

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<sup>11/</sup> IWG-2 Interim Report, p. 16, Table 2.

services that MSS systems can offer in these bands.<sup>12/</sup>

If these functions are to be accommodated on future NVNG MSS below 1 GHz, then brief messages, low duty cycles,<sup>13/</sup> and low data rates cannot be used to justify the possibility of sharing with Fixed and Mobile services.<sup>14/</sup> As for geographic separations, UTC questions how terrestrial MSS user terminals can be effectively separated from land mobile facilities given the itinerant nature of the MSS user terminal.

**E. Sharing With Heavily Used Land Mobile Bands Has Already Been Recognized Internationally As a Problem for MSS**

The problems associated with proposing an MSS allocation for heavily used land mobile bands were noted by ITU-R Task Group 8/3:

When considering future spectrum requirements for the MSS below 1 GHz this assessment cannot be

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<sup>12/</sup> IWG-2 Interim Report, pp. 8-9.

<sup>13/</sup> Indeed, ITU-R Task Group 8/3 recommended against setting limits on durations or duty cycles as this could "unnecessarily constrain the MSS terminal transmissions." "Comments Regarding Sharing Scenarios for LEO MSS Below 1 GHz," ITU-R Document 8-3/17 (Toronto, July 1994), at p. 2.

<sup>14/</sup> It is instructive to note the MSS parameters assumed in Recommendation ITU-R M.1087, "Methods for Evaluating Sharing Between Systems in the Land Mobile Service and Spread-Spectrum Low-Earth Orbit (LEO) Systems in the Mobile-Satellite Services (MSS) Below 1 GHz." In that document, it was assumed that a MSS user terminal would transmit with a 100 ms "burst" with only one transmission per day. This would hardly seem sufficient to accommodate the transmission of facsimiles, longer messages, and data/information files as now proposed by the MSS interests.

made without taking due account of the existing allocations of other services and the developments of the radio applications within these existing allocations.

At present many of the existing allocations for the land mobile services are becoming more and more extensively used in many countries. The growth of terrestrial cellular mobile networks and other high density land mobile applications will make the relevant bands difficult to share between land mobile services and the MSS. Administrations should take into consideration that the conflicting spectrum requirements have to be balanced with respect to both services.<sup>15/</sup>

In this case, the IAC has grossly underestimated the difficulty of sharing the private land mobile bands at 150-174, 450-470 and 470-512 MHz. UTC therefore urges the Commission to recommend against making any MSS allocations in this spectrum.

**III. Most of the "Lowest Priority" Bands Are Not Suitable Candidates for Sharing and Should Be Deleted from the Table**

UTC agrees with the IAC that the 806-824, 896-901 and 935-940 MHz land mobile bands as well as the 935-941, 941-944, and 944-960 MHz fixed microwave bands should be considered, at best, "low priority" candidates for MSS sharing. The 800 and 900 MHz land mobile bands are experiencing tremendous growth, and are used by public safety agencies, utilities, pipelines, and other PLMR licensees to support many of the same applications as are conducted in the lower PLMR bands. Likewise, many utilities and

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<sup>15/</sup> "Preliminary Spectrum Requirements for Future Non-GSO MSS Networks Below 1 GHz," Document 8-3/18 (Toronto, July 1994).

pipelines rely on both point-to-point and point-to-multipoint facilities in the 928-929 and 952-960 MHz bands for critical telemetry and SCADA (supervisory control and data acquisition) communications. In fact, because of a widespread scarcity of point-to-multipoint channels in the 928/952 MHz bands, many utilities and pipelines have applied for authorizations in the 932.0-932.5 and 941.0-941.5 MHz bands. It is also important to note that most fixed transmitters operating in these bands operate continuously or nearly continuously. Thus, UTC recommends that these bands be deleted from the list of possible candidate bands.

#### IV. Conclusion

In suggesting that the private land mobile bands at 150-174, 450-470 and 470-512 MHz could be allocated to the Mobile Satellite Service, the Industry Advisory Committee seriously underestimated the number of transmitters currently operating in these bands, the growth of the mobile services in these bands, and the prospects for accelerated growth due to the FCC's "refarming" effort. There also seems to be a fundamental contradiction between the criteria for land mobile and MSS to share spectrum and the types of services the MSS proponents hope to offer. Similarly, the IAC's designation of certain "lowest priority" bands seems misplaced, as these bands would suffer from many of the same problems. UTC therefore urges the FCC to

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recommend against the allocation of these private land mobile and microwave bands to the Mobile Satellite Service.

WHEREFORE, THE PREMISES CONSIDERED, UTC respectfully requests the Commission to take action in this docket consistent with the views expressed herein.

Respectfully submitted,

UTC

By:

  
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Dated: March 6, 1995

# **CERTIFICATE OF SERVICE**

I, Kym B. Winborne, a secretary with UTC, hereby certify that I have caused to be delivered by hand, this 6th day of March, 1995, a copy of the foregoing "Comments of UTC" to each of the following:

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